

Grades PreK–2: Number and Operations

STANDARD I. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

EXPECTATION

A. Count with understanding and recognize “how many” in sets of objects.

PreK	K	1	2
	*1. Given a set containing 10 or fewer concrete items, tell how many are in a set by counting the number of items orally using 1:1 correspondence.	1. Given a set of 10 to 100 objects, tell how many items there are by using 1:1 correspondence.	
		*2. Given a set of 10 or fewer concrete items, identify and describe one set as having more, fewer, or the same number of members as the other set.	
		*3. Count forward to 20 and backward from 10.	

EXPECTATION

B. Use multiple models to develop initial understandings of place value and the base-ten number system.

PreK	K	1	2
		*1. Represent up to three-digit numerals using various concrete and pictorial models.	1. Using a calculator, explain the patterns in the numeration system relating to place value in numerals up to four digits. *2. Identify the place value of each digit in a four-digit numeral.
		2. Identify the place value of each digit in a three-digit numeral.	

EXPECTATION

C. Develop understanding of the relative position and magnitude of whole numbers and of ordinal and cardinal numbers and their connections.

PreK	K	1	2
		1. Compare the magnitudes of three given quantities (a one-digit numeral, a two-digit numeral, and a three-digit numeral).	
		1. Identify the positions first through twentieth, using an ordered set of objects. 1. Determine more than, less than, and equals based on counts using manipulatives (more, less, same number).	*2. Identify the positions first through thirtieth, using an ordered set of objects. 3. Describe pairs of numerals each less than 100 using the words <i>is greater than, is less than, and equals</i> . *2. Compare and write two whole numerals between 0 and 999, using symbols and words ($>$, $<$, $=$, <i>is greater than, is less than, and equals</i>). *4. Read whole numbers from a number line labeled from 0 to 180 (180 school days).

EXPECTATION D. Develop a sense of whole numbers and represent and use them in flexible ways, including relating, composing, and decomposing numbers.

PreK	K	1	2
	1. Discuss and explain how numerals are used in the environment (e.g., house numbers, phone numbers, dates).	1. Construct representations of number combinations up to 10 (e.g., number stories, equations, pictures).	

EXPECTATION E. Connect number words and numerals to the quantities they represent, using various physical models and representations.

PreK	K	1	2
1. Distinguish “one” from “many.”	*1. Identify the numeral that matches a quantity (1–10).	*1. Write the numeral that corresponds to a given set up to 100.	
		2. Write in words whole numbers through 10.	1. Write in words whole numbers through 20.
			*3. Identify odd and even numerals up to 100.

EXPECTATION F. Understand and represent commonly used fractions, such as $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$.

PreK	K	1	2
	1. Divide a set of objects into equal groups.	*1. Identify and represent $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$ of a whole using concrete and pictorial models.	1. Write the fractions that represent $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$ of a set or region.
			*2. Using models, order $\frac{1}{4}$, $\frac{1}{3}$, and $\frac{1}{2}$.

STANDARD**II. Understand meanings of operations and how they relate to one another.****EXPECTATION****A. Understand various meanings of addition and subtraction of whole numbers and the relationship between the two operations.**

PreK	K	1	2
	*1. Add and subtract whole numbers using up to ten concrete items.	*1. Demonstrate concretely and symbolically the meaning of one-digit and two-digit addition and subtraction.	1. Demonstrate the inverse relationship between addition and subtraction.

EXPECTATION**B. Understand the effects of adding and subtracting whole numbers.**

PreK	K	1	2
	1. Relate the operation of addition to increase in quantity and subtraction to decrease in quantity.		

EXPECTATION**C. Understand situations that entail multiplication and division, such as equal groupings of objects and sharing equally.**

PreK	K	1	2
			*1. Describe models of equal groupings (multiplication) as repeated addition and arrays. *2. Describe models of sharing equally (division) as repeated subtraction and arrays.

STANDARD

III. Compute fluently and make reasonable estimates.

EXPECTATION

A. Develop and use strategies for whole-number computations, with a focus on addition and subtraction.

PreK	K	1	2
		<ul style="list-style-type: none">1. Explain and describe strategies for addition and subtraction.*2. Solve story and picture problems using one-step solutions and basic addition facts with sums up to 18 and corresponding subtraction facts.	<ul style="list-style-type: none">*1. Demonstrate the connection between the base-ten concepts and computational strategies.*2. Solve addition and subtraction problems (two-step solutions) using data from simple charts and picture graphs.

EXPECTATION

B. Develop fluency with basic number combinations for addition and subtraction.

PreK	K	1	2
		<ul style="list-style-type: none">*1. Recall basic addition facts with sums up to 18 and the corresponding subtraction facts.*2. Add and subtract pairs of two-digit whole numbers without regrouping.	<ul style="list-style-type: none">*1. Write addition and subtraction facts in numerical sentences.*2. Add and subtract pairs of two-digit whole numbers with and without regrouping.*3. Find missing addends and subtrahends in number combinations up to 20.

EXPECTATION

C. Use a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, and calculators.

PreK	K	1	2
		1. Estimate the number of objects in a set of from 5 to 20 objects. 2. Determine the most reasonable answer for an addition or subtraction problem.	1. Given choices, select a reasonable estimate for a set of at most 1,000 objects. 2. Justify the most reasonable answer for an addition and subtraction problem using paper and pencil and using a calculator.
			3. Select the most efficient method to solve an addition or subtraction problem.
			*4. Round numbers up to 90 to the nearest 10.